



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/355,946	08/16/1999	MASANORI NAKAMURA	P7318-9007	7148
23353	7590	08/09/2004	EXAMINER	
RADER FISHMAN & GRAUER PLLC			GOFF II, JOHN L	
LION BUILDING			ART UNIT	
1233 20TH STREET N.W., SUITE 501			PAPER NUMBER	
WASHINGTON, DC 20036			1733	

DATE MAILED: 08/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<p align="center"><b>Office Action Summary</b></p>	<b>Application No.</b> 09/355,946	<b>Applicant(s)</b> NAKAMURA ET AL.	
	<b>Examiner</b> John L. Goff	<b>Art Unit</b> 1733	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 June 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-5 and 7-13 is/are pending in the application.
- 4a) Of the above claim(s) 1-4, 9 and 10 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 5, 7, 8 and 11-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114 was filed in this application after appeal to the Board of Patent Appeals and Interferences, but prior to a decision on the appeal. Since this application is eligible for continued examination under 37 CFR 1.114 and the fee set forth in 37 CFR 1.17(e) has been timely paid, the appeal has been withdrawn pursuant to 37 CFR 1.114 and prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on 6/21/04 has been entered.

### ***Claim Objections***

2. Claims 5, 7, 8, 11, and 12 are objected to because of the following informalities: As noted in the Examiners Answer, previously claim 5, line 4 required depositing a polymerizable monomer. The word polymerizable was omitted from the claims submitted in the RCE. However, the word was not properly deleted, i.e. ~~polymerizable~~. In response to this action applicant should amend claim 5 to require either "a polymerizable monomer" or "a ~~polymerizable~~ monomer".

### ***Claim Rejections - 35 USC § 103***

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Art Unit: 1733

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 5, 7, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rasmussen (U.S. Patent 3,471,353) in view of Frese (U.S. Patent 3,514,359).

Rasmussen discloses bonding two oriented polyolefin (e.g. polyethylene, polypropylene, etc.) sheets through a method comprising depositing a solvent on a surface of the sheets followed by applying pressure and heat (the temperature below the point of shrinking/melting) to bond the two sheets together. Rasmussen teaches the solvent dissolves the sheets at their surface.

Rasmussen is not limited to any particular solvent (Figure and Column 2, lines 4-30 and Column 4, lines 8-13). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use as the solvent taught by Rasmussen one comprising a polymerizable monomer (e.g. styrene) and peroxide as it was well known in the art to bond two polyolefin sheets together using this type of solvent as shown for example by Frese to form a strong bond, i.e. bond with high tensile strength, having accurate dimensions/dimensionally stable.

As to the oriented polyolefin sheets taught by Rasmussen having an average coefficient of linear expansion (LEC) not exceeding  $5 \times 10^{-5}$  ( $^{\circ}\text{C}$ ) in the 20-80  $^{\circ}\text{C}$  range, it is noted the oriented polyolefin materials employed in Rasmussen are the same as those claimed by applicant

Art Unit: 1733

and they are consistent and in agreement with applicants specification (Page 9, lines 7-11) such that the oriented polyolefin sheets taught by Rasmussen would intrinsically have the claimed average LEC values. Furthermore, applicants admitted prior art indicates that unoriented polyolefins have an average LEC of greater than  $5 \times 10^{-5}$  ( $^{\circ}\text{C}$ ) and it is only the inclusion of orientated polyolefin material that lowers the average LEC value below  $5 \times 10^{-5}$  ( $^{\circ}\text{C}$ ) such that applicants admitted prior art is evidence that the oriented polyolefin sheets taught by Rasmussen have the claimed average LEC values (Specification Page 7, lines 13-24).

Frese discloses bonding two polyolefin sheets through a method comprising depositing a solvent on a surface of one or both sheets followed by applying pressure and heat to bond the two sheets together. Frese teaches the solvent dissolves the sheets at their surface. Frese teaches preferred embodiments, i.e. embodiments with strong bonds/high tensile strength and accurate dimensions/dimensionally stable, wherein the solvent comprises polymerizable hydrocarbons (e.g. styrene monomer) and peroxide, the peroxide is added to increase the speed of polymerization (Column 1, lines 36-38 and 52-57 and Column 2, lines 5-17 and 42-51 and Column 3, lines 4-6 and Column 4, lines 30-59 and specifically Examples 24 and 27).

6. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rasmussen and Frese as applied to claims 5, 7, and 13 above, and further in view of Ikenaga et al. (U.S. Patent 4,717,624).

Rasmussen and Frese as applied above teach all of the limitations in claim 8 except for a teaching on using as the oriented polyolefin sheets one having a minus average LEC and one having a plus average LEC. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use as the oriented polyolefin sheets taught by Rasmussen as

Art Unit: 1733

modified by Frese oriented sheets having alternating plus and minus average LEC values to form laminated composites with improved dimensional stability as suggested by Ikenaga et al.

Ikenaga et al. disclose bonded composites (e.g. including polyolefin containing) comprising a plurality of stacked sheets. Ikenaga et al. teach the stacked and bonded sheets comprise alternating oriented sheets having minus values for the average coefficient of linear expansion (LEC) next to oriented or unoriented sheets having plus values for the average LEC wherein the alternating arrangement of plus and minus values for the average LEC give the bonded composites improved dimensional stability (Column 1, lines 20-29 and 43-68 and Column 2, lines 12-26 and 30-43 and Column 11, lines 38-30 and Column 12, lines 41-53).

7. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rasmussen and Frese as applied to claims 5, 7, and 13 above, and further in view of Drake (U.S. T888,001).

Rasmussen and Frese as applied above teach all of the limitations in claims 11 and 12 except for a teaching on heat treating the oriented polyolefin sheets before bonding. It would have been obvious to one of ordinary skill in the art at the time the invention was made to heat treat the oriented polyolefin sheets taught by Rasmussen as modified by Frese before bonding as it was well known in the art as shown for example by Drake to heat treat a polyolefin sheet prior to bonding so that it better adheres to additional polyolefin sheets.

Drake discloses bonding two polyolefin sheets through a method comprising heat treating (e.g. by flame treatment, electrical discharge treatment, etc.) a surface of each film followed by applying pressure and heat to bond the two sheets together (Figure and Abstract).

Art Unit: 1733

8. Claims 5, 7, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frese in view of Rasmussen.

The teachings of Frese are described above. Frese is silent as to using oriented or unoriented polyolefin sheets. It would have been well within the purview of one of ordinary skill in the art at the time the invention was made to use as the polyolefin sheets taught by Frese oriented polyolefin sheets as it was well known in the art to bond two oriented polyolefin sheets together using a solvent bonding process as shown for example by Rasmussen (Rasmussen is described above) as those skilled in the art readily appreciate oriented sheets have greater strength than unoriented sheets.

As to the oriented polyolefin sheets taught by Frese as modified by Rasmussen having an average coefficient of linear expansion (LEC) not exceeding  $5 \times 10^{-5}$  ( $^{\circ}\text{C}$ ) in the 20-80  $^{\circ}\text{C}$  range, it is noted the oriented polyolefin materials employed in Frese as modified by Rasmussen are the same as those claimed by applicant and they are consistent and in agreement with applicants specification (Page 9, lines 7-11) such that the oriented polyolefin sheets taught by Frese as modified by Rasmussen are seen to have the claimed average LEC values. Furthermore, applicants admitted prior art indicates that unoriented polyolefins have an average LEC of greater than  $5 \times 10^{-5}$  ( $^{\circ}\text{C}$ ) and it is only the inclusion of orientated polyolefin material that lowers the average LEC value below  $5 \times 10^{-5}$  ( $^{\circ}\text{C}$ ) such that applicants admitted prior art is evidence that the oriented polyolefin sheets taught by Frese as modified by Rasmussen have the claimed average LEC values (Specification Page 7, lines 13-24).

Art Unit: 1733

9. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Frese and Rasmussen as applied to claims 5, 7, and 13 above, and further in view of Ikenaga et al.

Frese and Rasmussen as applied above teach all of the limitations in claim 8 except for a teaching on using as the oriented polyolefin sheets one having a minus average LEC and one having a plus average LEC. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use as the oriented polyolefin sheets taught by Frese as modified by Rasmussen oriented sheets having alternating plus and minus average LEC values to form laminated composites with improved dimensional stability as suggested by Ikenaga et al. (Ikenaga et al. is described above).

10. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frese and Rasmussen as applied to claims 5, 7, and 13 above, and further in view of Drake.

Frese and Rasmussen as applied above teach all of the limitations in claims 11 and 12 except for a teaching on heat treating the oriented polyolefin sheets before bonding. It would have been obvious to one of ordinary skill in the art at the time the invention was made to heat treat the oriented polyolefin sheets taught by Frese as modified by Rasmussen before bonding as it was well known in the art as shown for example by Drake (Drake is described above) to heat treat a polyolefin sheet so that it better adheres to additional polyolefin sheets.

### ***Response to Arguments***

11. Applicant's arguments filed 6/21/04 have been fully considered but they are not persuasive. Regarding applicants arguments as to the average LEC value of the oriented polyolefin sheets taught by Rasmussen, the oriented polyolefin materials employed in



Art Unit: 1733

Rasmussen are the same as those claimed by applicant and they are consistent and in agreement with applicants specification (Page 9, lines 7-11) such that the oriented polyolefin sheets taught by Rasmussen would intrinsically have the claimed average LEC values. Applicant has provided not evidence to the contrary. Further, applicants admitted prior art indicates that unoriented polyolefins have an average LEC of greater than  $5 \times 10^{-5}$  ( $^{\circ}\text{C}$ ) and it is only the inclusion of orientated polyolefin material that lowers the average LEC value below  $5 \times 10^{-5}$  ( $^{\circ}\text{C}$ ) such that applicants admitted prior art is evidence that oriented polyolefin materials of the type in Rasmussen have average LEC values below  $5 \times 10^{-5}$  ( $^{\circ}\text{C}$ ) (Specification Page 7, lines 13-24).

Art Unit: 1733

***Conclusion***

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **John L. Goff** whose telephone number is **(571) 272-1216**. The examiner can normally be reached on M-F (7:15 AM - 3:45 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Blaine Copenheaver can be reached on (571) 272-1156. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



John L. Goff



BLAINE COPENHEAVER  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700